

Associations between Community Nutrition Environments and Early Care and Education Barriers to Classroom Nutrition Practices.

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Overview.

- ▶ Background & Study Purpose
 - ▶ Early Childhood Education
 - ▶ Community Impact on Nutrition
 - ▶ Specific Aims & Hypotheses
- ▶ Survey and Measures
- ▶ Study Findings
- ▶ Conclusions

Promoting Health in ECEs.

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- ▶ The early childhood years are **formative and essential** for developing preferences and behaviors.¹
- ▶ Child behavior is influenced by practices and attitudes of **primary caregivers**, including those involved in their daily out-of-home care.²
- ▶ Therefore, settings for early childhood education (ECEs) are ideal for promoting health-related patterns (i.e., **physical activity** and **nutrition**).

1. Benjamin et al., 2008
2. Maher et al., 2008.

ECE Classroom Best Practices.

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Nutrition

- ▶ Offering fruits, vegetables, and lean proteins.
- ▶ Encouraging children to try new or less preferred foods.
- ▶ Serving meals family style.

Gubbels et al., 2010
Pate et al., 2004.

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ECE Classroom Best Practices.

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Nutrition

- ▶ ~~Offering fruits, vegetables, and lean proteins.~~
- ▶ ~~Encouraging children to try new or less preferred foods.~~
- ▶ ~~Serving meals family style.~~

Financial concerns.

Children's preferences.

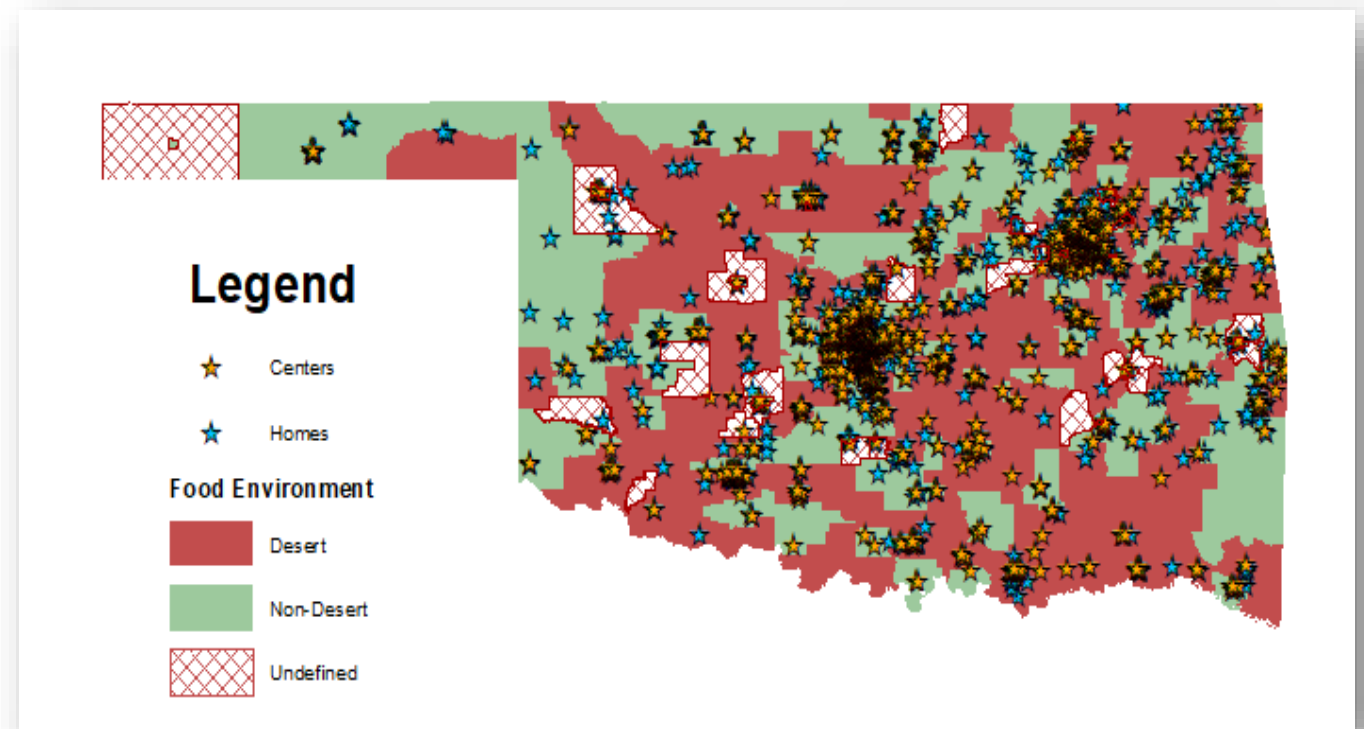
Concern for food waste.

Community Impact on Nutrition.

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- ▶ Lack of access to **healthy food outlets**, and higher density of fast food outlets, is related **lower-quality diets** in all age groups.¹
- ▶ Healthfulness of food outlets surrounding **schools** impacts diets of **older children**.²



1. Drewnowski et al., 2004.
2. Laxer, et al. 2014.

Purpose.

Determine associations between **community nutrition environments** and **ECE barriers** to classroom nutrition practices, *by ECE context* [Head Starts, community-based childcare (CBCs), and family child care homes (FCCHs)].

We hypothesized that community access to healthy environments will influence type of perceived barriers to implementing classroom nutrition practices.

Statewide Survey: “COMMUNITIES & CLASSROOM HEALTH”.

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- ▶ Statewide survey including **directors** of licensed childcare settings in Oklahoma that serve children 3 to 5 years old.
- ▶ Data collection November 2019 to February 2020.
 - ▶ Mailed surveys
 - ▶ Email distribution of online survey link
 - ▶ Phone call follow-ups for non-respondents
- ▶ Collected information on center location and characteristics, and classroom health practices and barriers.

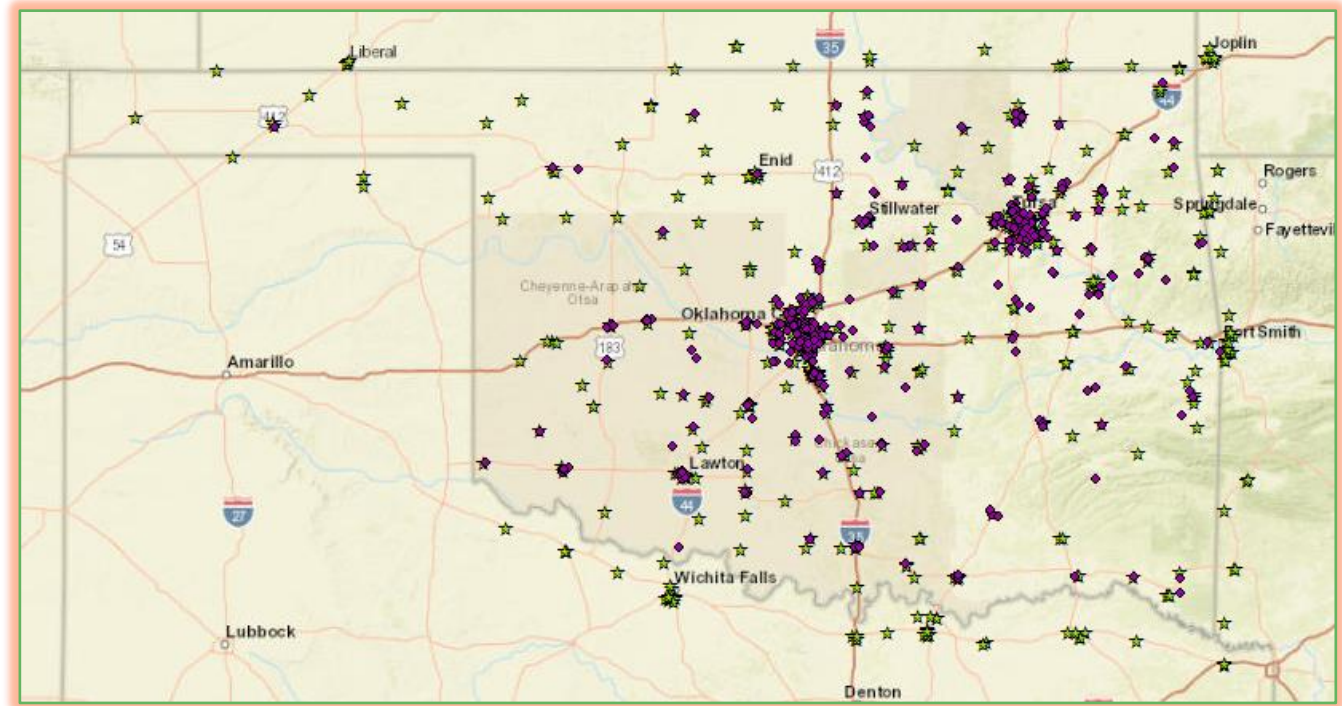
Community Nutrition Environments.

- ▶ Geocoded locations of **grocery stores** in Oklahoma using ArcMap 10.6
 - ▶ Location determined by in-person audit conducted in 2016

“Food Desert”¹

No grocery stores within specified radius of ECEs

- 0.25 mile for Urban sites
- 10 miles for Rural sites



1. Moore et al., 2006.

Barriers to Classroom Nutrition Practices

- ▶ Items derived from previous statewide survey¹
 - ▶ Reported (Y/N) whether the ECE experienced specific barriers to:
 - ▶ (1) **serving healthful foods and beverages**

Example Classroom Nutrition Practices & Barriers	
<i>Practices</i>	<i>Barriers</i>
<ul style="list-style-type: none">- Including fruits/vegetables as snacks- Serve no juice	<ul style="list-style-type: none">- Not enough money to cover costs- Lack of control over meals

(2) **implementing mealtime best practices**

<ul style="list-style-type: none">- Serving meals family style- Talking with children about foods	<ul style="list-style-type: none">- Children make too much of a mess- Lack of time and/or staff
--	--

1. Garcia et al., 2018.

Statistical Analysis.

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- ▶ Means, frequencies, variable re-coding and primary analyses performed in SAS 9.4
- ▶ Non-parametric methods were used for all analyses
 - ▶ Fisher's Exact test for difference in prevalence of reporting barriers across categories:
 - ▶ ECE context
 - ▶ Food Desert status
- ▶ Level of significance were adjusted for multiple comparison ($p < 0.004$)

Results: Final Sample.

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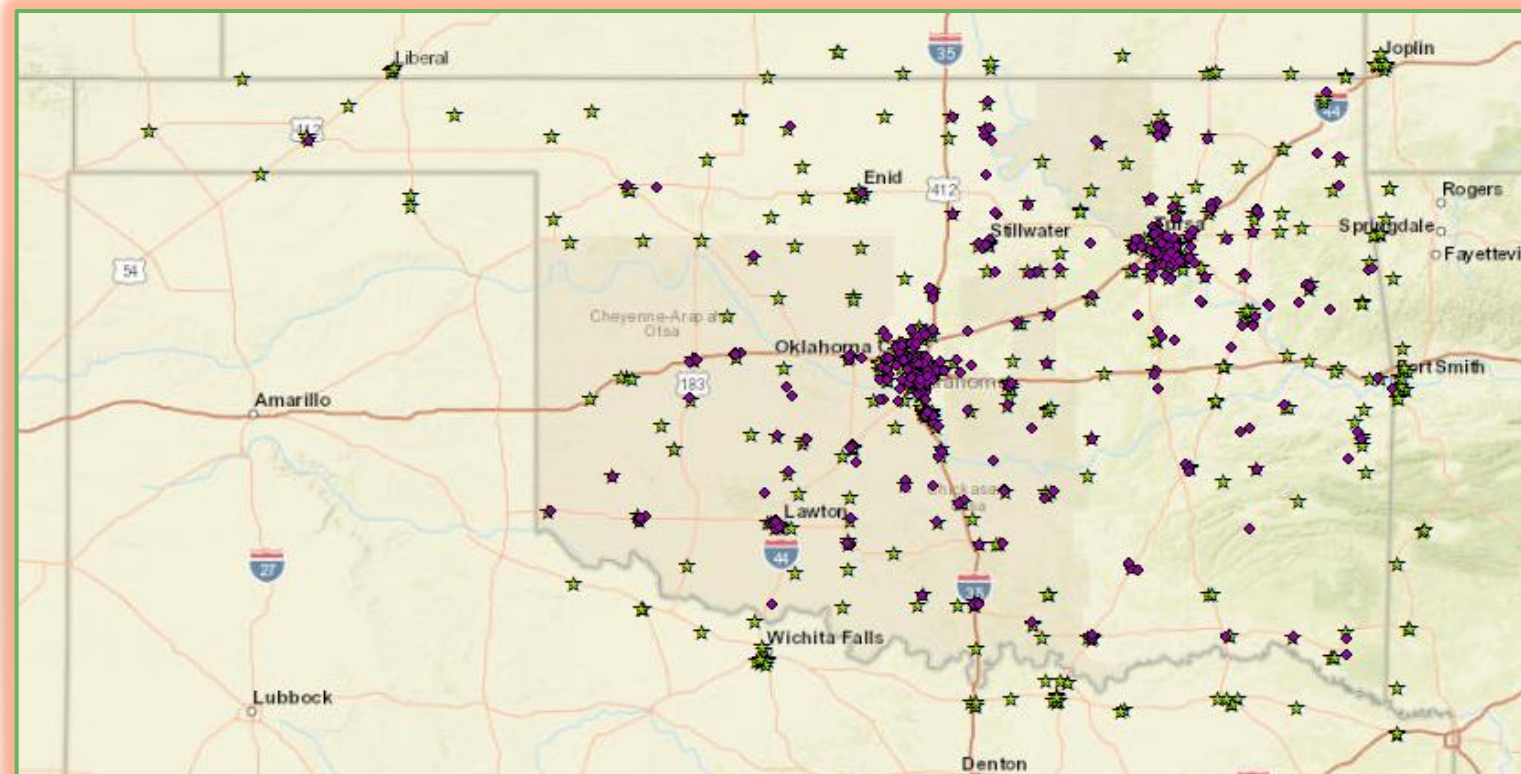
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- ▶ **Head Start centers (n=54)**
 - ▶ Had the highest percent of teachers with a Bachelor's degree or higher
 - ▶ Had the highest number of supporting staff (non-teachers)
- ▶ **Community-Based Childcare (n=159)**
 - ▶ Served the highest number of total children
 - ▶ Had the lowest percent of serving children on SNAP or WIC
- ▶ **Family Child Care Homes (n=160)**
 - ▶ Had the lowest number of staff and children
 - ▶ Were mostly participating in CACFP (88.0%)

Results: ECEs and Food Desert Status.

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24.0% Head Starts,
27.6% CBCs, &
36.8% FCCHs
are located in a
“Food Desert”

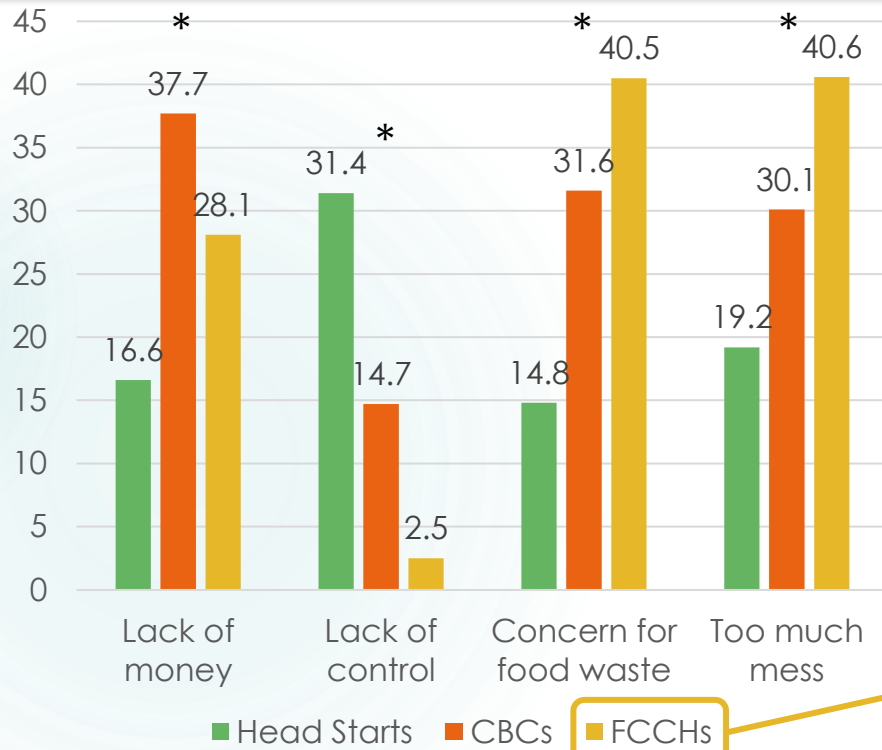
TABLE 1. Characteristics of the center and community food environment, by child care context.

	Head Start (<i>n</i> =51)	CBC (<i>n</i> =155)	FCCH (<i>n</i> =159)
Professional Program Participation [n (%)]			
CACFP	53 (98.5)	99 (62.2)	142 (88.7)
Go NAP SACC	4 (7.4)	6 (3.7)	3 (1.8)
Certified Early Childhood	11 (20.3)	19 (11.9)	10 (6.2)
Methods for Purchasing Center Foods [n (%)]			
In-person shopping at a store	7 (13.2)	53 (33.9)	124 (77.5)
Online ordered then picked up in-person	1 (1.8)	38 (24.3)	27 (16.8)
Online and delivered	23 (43.4)	44 (28.2)	8 (5.0)
Over the phone with a vendor	22 (41.5)	21 (13.4)	1 (0.6)
Roundtrip Miles to Purchasing Center Foods (mean ± SD)	11.6 ±13.7	15.5 ± 21.3	18.7 ± 22.6
Person Responsible for Center Meal Planning [n (%)]			
Owner/Director	5 (9.2)	65 (40.8)	152 (95.0)
Cook or Chef	18 (33.3)	81 (50.9)	5 (3.1)
Catering Company	2 (3.7)	1 (0.6)	0 (0.0)
Dietician	15 (27.7)	4 (2.5)	0 (0.0)
Located within a “Food Desert” [n (%)]	13 (24.0)	44 (27.6)	59 (36.8)
Distance in Miles to Nearest Grocery Store (mean% ± SD)	2.2 ± 3.3	1.5 ± 2.6	2.3 ± 3.1

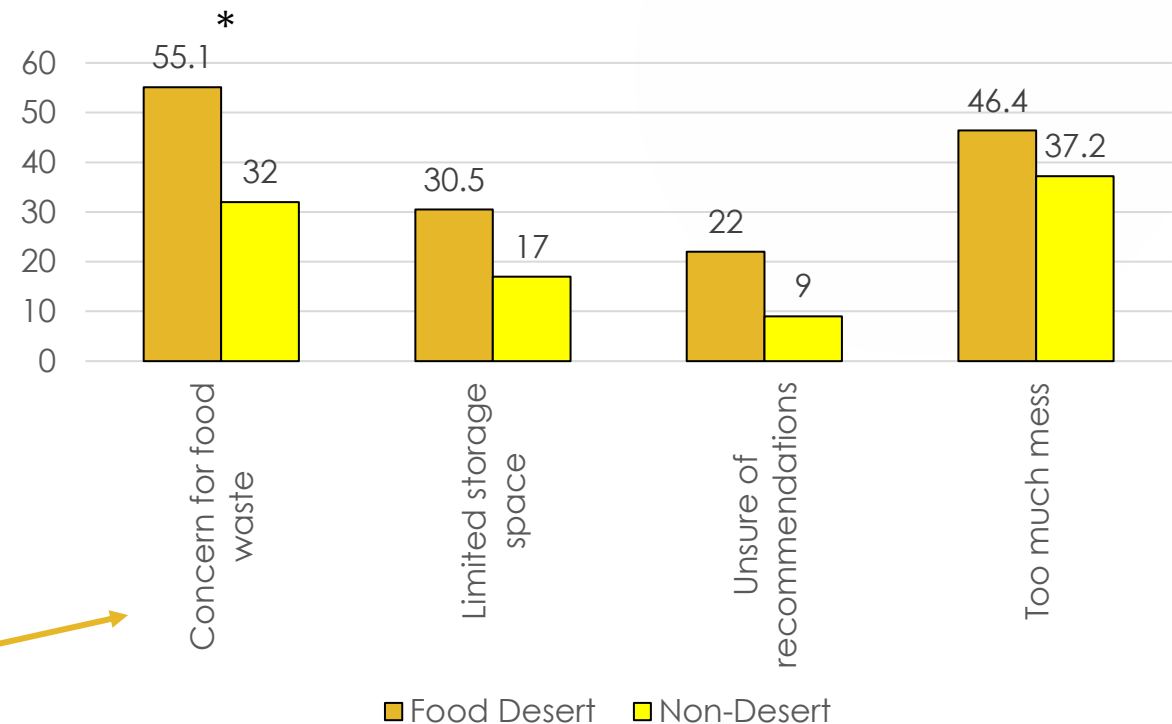
CBC= Community-Based Childcare; FCCH= Family Child Care Homes; CACFP= Child and Adult Care Food Program; NAPSACC= Nutrition and Physical Activity Self-Assessment for Child Care.

Barriers to Classroom Nutrition Practices...

...% by ECE Context.



...% by Food Desert Status, in FCCHs only.



*Barriers did **not** vary by Food Desert status in Head Starts or CBCs.

Summary & Conclusions.

- ▶ This study is the **first** to examine how the surrounding community is related ECE classroom health.
- ▶ For **FCCHs only**, location within a Food Desert was associated with reporting *higher prevalence of barriers* to serving healthful food and beverages.
 - ▶ Head Starts and CBCs may be protective of the surrounding community environment, unlike schools or homes.
 - ▶ Future research and policy implementation should seek to understand how to provide **support** for *FCCHs residing in low-access areas*.
- ▶ Differences in how ECEs interact with their surrounding community **may be attributable to differences** in allotted resources for implementing health practices, food preparation methods, meal planning, and food purchasing.
 - ▶ Future studies should examine whether food prep/planning methods and more influence implementation of nutrition practices, *across ECE types*.

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OUHSC Department of Nutritional Sciences

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QUESTIONS?

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Family Child Care Home Menu Quality: Happy Healthy Homes Baseline

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Developing Adventurous Eaters

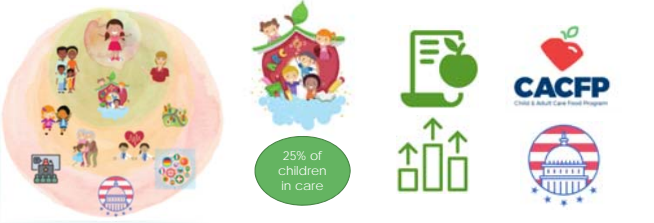


- Critical time of development, optimal nutrition needed, avoid excess calories
Establishing lifetime dietary patterns
- A time of picky eating and food neophobia
- Repeated food exposures necessary
Large variety of food exposures

(Markovic et al. 2009; Doak et al. 2005; Nicklaus 2009; Taylor et al. 2015; Dovey et al. 2008; Skinner et al. 2002; Birch 1999)

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A Bio-ecological Approach



25% of children in care


CACFP
Child & Adult Care Food Program

(Bronfenbrenner 1979; Bronfenbrenner 1994; Laughlin 2013; Ritchie et al. 2012; Ertosho et al. 2018; Loth et al. 2019; Korenman et al. 2013; Andreyeva et al. 2018; Lee et al. 2018; Larson et al. 2011; Benjamin-Neelon et al. 2018; Trampton et al. 2014; Mazaiof et al. 2013; Sison et al. 2020; Kroeger et al. 2020.)

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Purpose


- Describe FCCH menu quality by examining nutrients, variation in food served, and compliance with the Child and Adult Care Food Program



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Methods

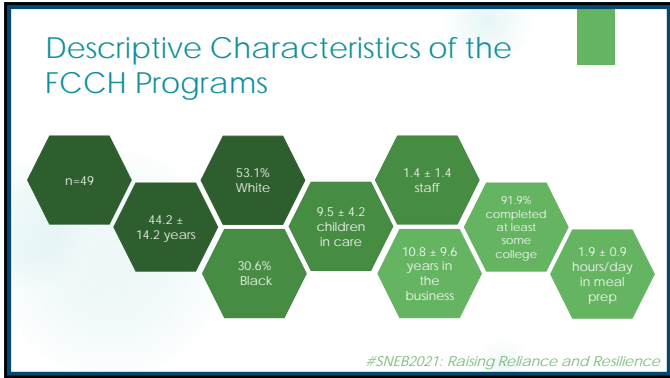
- Happy Healthy Homes
 - Family Child Care Home
 - CACFP participation
 - Care for at least one 2-to-5 year old child
- Menu provided
 - One week analyzed
 - Breakfast, lunch, snack
 - Food Processor
 - Dietary Reference Intakes (2/3)
 - Variety of foods
 - CACFP recommendation and best practice compliance



Happy Healthy Homes
OINSS: College of Allied Health & College of Public Health
OSU College of Human Sciences
Oklahoma Cooperative Extension Service
Oklahoma Department of Human Services
State Department of Education

(Sison et al. 2019; Sison et al. 2020; Benjamin-Neelon et al. 2018)

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FCCH Macronutrient Profiles

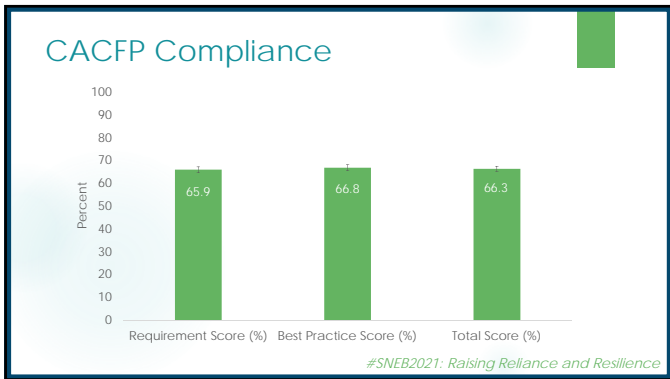
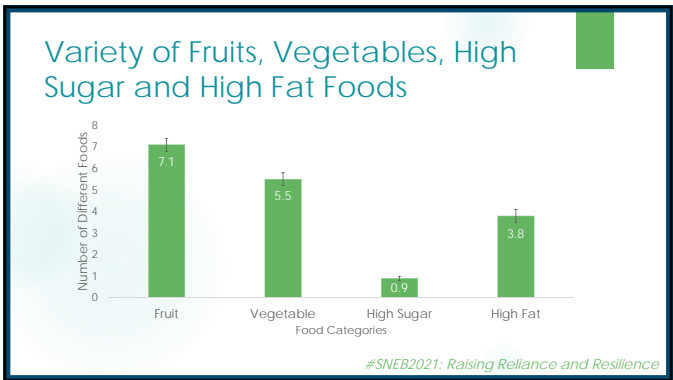
Nutrient	Mean ± SD	95% CI	1-3 year DRI	Within 95% CI	4-8 year DRI	Within 95% CI
Energy (kcal)	640 ± 14	661-668	666-933	within	800-1067	insufficient
Protein (g)	31.3 ± 0.9	29.6-33.1	8.7	exceeds	12.7	exceeds
Carbs (g)	90.5 ± 1.6	87.2-93.8	86.7	exceeds	86.7	exceeds
Total fat (%)	25.3 ± 0.7	24.0-26.6	30-40	insufficient	25-35	within
Total fat (g)	18.3 ± 6.0	16.5-20.0	--	--	--	--
Sat fat (g)	7.1 ± 0.3	6.7-7.77	As low as possible	--	As low as possible	--
Fiber (g)	7.3 ± 0.2	6.9-7.7	12.7	insufficient	16.7	insufficient

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FCCH Micronutrient Profiles

Nutrient	Mean ± SD	95% CI	1-3 year DRI	Within 95% CI	4-8 year DRI	Within 95% CI
Vitamin A RAE (mcg)	447.3 ± 12.2	422.7-471.9	200	exceeds	266.7	exceeds
Vitamin C (mg)	36.0 ± 2.0	32.0-40.0	10	exceeds	16.7	exceeds
Vitamin D (IU)	219.1 ± 4.3	210.4-227.7	400	insufficient	400	insufficient
Calcium (mg)	707.9 ± 15.3	677.2 - 738.6	466.7	exceeds	666.7	exceeds
Iron (mg)	4.5 ± 0.1	4.2 - 4.8	4.7	within	6.7	insufficient
Sodium (mg)	870.0 ± 27.3	815.1-925.0	666.7	exceeds	800	exceeds
Zinc (mg)	4.3 ± 0.2	4.0-4.7	2.0	exceeds	3.3	exceeds

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Discussion

- Menu quality is similar to previous reports
- Menu quality varies from foods served
 - Most substitutions are of equal or higher nutrition quality
- Variety of produce is encouraging
- Increase information provided on menus

(Sisson et al. 2020; Frampton et al. 2014; Kroeger et al. 2020; Dave et al. 2018; Fleischhacker et al. 2006; Breck et al. 2016; Benjamin-Nelson et al. 2010; Copeland et al. 2013; Gemtzen et al. 2017)

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